



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER FOR PATENTS

P.O. Box 1450

Alexandria, Virginia 22313-1450

www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/678,170	10/06/2003	David Joseph Kropaczek	24GA6001	2278
33727	7590	04/03/2009		
HARNESS, DICKEY & PIERCE, P.L.C.				
P.O. BOX 8910				
RESTON, VA 20195				
EXAMINER				
CRAIG, DWIN M				
ART UNIT		PAPER NUMBER		
2123				
MAIL DATE		DELIVERY MODE		
04/03/2009		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/678,170

Applicant(s)

KROPACZEK ET AL.

Examiner

DWIN M. CRAIG

Art Unit

2123

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 January 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 35-48 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 35-48 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/CDC)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____
- Paper No(s)/Mail Date _____

DETAILED ACTION

1. Claims 35-48 have been presented for reconsideration based on Applicants' arguments.

Response to Arguments

2. Applicants' arguments presented in the 1/29/2009 responses have been fully considered; the Examiner's response is as follows:

2.1 As regards Applicants' response to the 35 U.S.C. 103(a) rejections of claims 35-48 as set for the in the non-final office action of 10/29/2008, on page 8 of the 1/29/2009 responses Applicants' argued;

"Nowhere does Fawks indicate that its populating process is ever graphically represented or otherwise displayed."

The Examiner respectfully traverses Applicants' arguments, *Fawks* was relied upon to provide a teaching of populating a load map based upon at least on fuel attribute, *see Office Action dated 10/29/2008 page 5*. Therefore Applicants' arguing that *Fawks* failure to teach a graphical representation is a spurious argument.

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

On page 9 Applicants' argued that, "the at least one fuel attribute used as the move/filter/sort basis is input to the graphical user interface...and further that this teaching is not found in the reference O'Sullivan and then that the references cannot be so finely dissected and reassembled to teach the recited loading tools and their functionality under § 103"

The Examiner respectfully traverses Applicants' argument, the claim language is directed towards a teaching of a graphical user interface used to configure loading patterns for the purpose of reconfiguring a fuel pool in a nuclear reactor. Applicants' claims are directed towards performing a previously manual process using a computer with a Graphical User Interface (GUI). GUI's are well known in the computer arts, O'Sullivan clearly teaches the use of a GUI to perform fuel cell loading and reconfiguration, the other references, *Fawks* and *Hogan* were relied upon to teach, known in the art, aspects of using a GUI, or in the case of *Fawks* a computer to perform fuel cell life cycle maintenance in a power plant. The use of a computer with a GUI to perform any function that was previously performed manually is obvious in view of the large amount of prior art teachings related to GUI's and computers used to automate previously performed manual activities. As stated in the previous Office Actions, it would have been obvious, at the time of Applicants' invention, to an artisan of ordinary skill, to have automated the method of determining how a fuel pool needs to be reconfigured, using GUI tools, as disclosed in *Hogan* and further to optimize the fuel rod configuration, as disclosed in *Fawks* to accomplish the claimed method. The efficiency and ease of use provided using a GUI and a computer, which facilitates the ability to perform almost endless configurations and then vet or test those configurations, without the requirement to repeat multiple complex calculations and then provide the results in a GUI to a user would be the motivation for an artisan of ordinary skill to combine the cited references in order to teach Applicants' claimed limitations.

On page 10 of the 1/29/2009 responses Applicants' further argued;

"Hogan teaches only a generic move tool without any suggestion of how the tool could be fashioned to discriminate based on input fuel bundle attributes when populating the core. See Hogan, FIG. 9, arrow element. Fawks, as discussed above, teaches computer-implemented

loading and shuffling with no indication how any graphical elements, let alone graphical tools, could be implemented in its automatic simulator populating. Where O'Sullivan teaches user input to rotate symmetric bundles, the symmetric attribute of the fuel bundles is not input into the graphical user interface, nor is there any suggestion that the rotation tool can be used on bundles being moved into the core. See O'Sullivan, p. 1. Thus, O'Sullivan lacks any inputting of a fuel bundle attribute, and none of the references suggest or even permit the precise surgery performed by the Examiner to meet the graphical tool elements of claims 35 and 42."

The Examiner respectfully traverses Applicants' arguments, the inputting of fuel bundle attributes is clearly disclosed in the figures in O'Sullivan on page 2, where there is disclosed a graphical representation of the fuel bundles with numbers, as well as the graphic of the spent fuel pool and Fresh pool Listing, all of which contain numbers which describe "attributes" of the fuel bundle attributes, in fact the spent fuel pool graphic table teaches the K-infinity "attribute" that Applicants' are claiming in claim 48, therefore it is confusing to the Examiner exactly which attributes of a fuel bundle the prior art references fail to teach.

2.2 Applicant's arguments filed 1/29/2009 have been fully considered but they are not persuasive. See above the reasons that the arguments were not persuasive. The previously applied prior art rejections of claims 35-48 will be maintained.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 35-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over “MICROBURN–B2 to RETRAN-3D Linking Code” by Donald Hines and “CPW for SIMULATE-3 by Kevin O’Sullivan contained in the “Update...” newsletter hereafter referred to as the *O’Sullivan* reference in view of U.S. Patent 5,414,809 to Hogan and in further view of U.S. Patent 5,923,717 to Fawks, Jr. hereafter referred to as *Fawks*.

3.1 Regarding independent claims 35 and 42 and using independent claim 35 as an example, *O’Sullivan* discloses, *a method of moving nuclear fuel from a fuel pool with a graphical user interface, the method comprising: inputting at least one fuel attribute into the graphical user interface, graphically populating, by the graphical user interface, a graphical loading map with graphical fuel bundles, the graphical bundles representing fuel bundles in at least one fuel pool*

(see the Figure on page 2 as well as the text “Clicking on the EXCEL command buttons loads data and graphs into a new or existing worksheet”, a spreadsheet is a *graphical loading map*). , *the graphical user interface configured to graphically select, sort, or move graphical fuel bundles* (page 1 discloses, “Using a right click on the mouse, groups of symmetric assemblies can be rotated 90, 180 or 270 degrees, core locations are darkened where an assembly has been moved.” Being able to select a *symmetric* group of assemblies clearly teaches the limitation of *selecting, sort or move*) *into the graphical loading map based on the at least one corresponding attribute of the fuel bundles represented by the graphical fuel bundles* (pages 1 & 2 and more specifically, “In both PWR and BWR versions, the core engineer design engineer can swap assembly locations in the core or “drag and drop” assemblies and their modeling data from the Spent Fuel Pool or Fresh Fuel locations to the core.”); *and physically placing the fuel bundles into a reactor core according to the populated graphical loading map.*

However, O’Sullivan does not expressly disclose, *including one or more loading tools* and further does not disclose *populating the graphical loading map, according to the input at least one fuel attribute and at least one corresponding attribute of the nuclear fuel bundles represented by the graphical fuel bundles.*

Hogan teaches, *a graphical user interface including one or more loading tools*, specifically Figure 9 shows a Graphical User Interface tool identical to the GUI tool disclosed in Applicants’ Figure 3 item # 160.

Fawks teaches, *populating a loading map, according to the input at least one fuel attribute and at least one corresponding attribute of the nuclear fuel bundles represented by the fuel bundles* (Figure(s) 1 & 2 and Col. 3 lines 43-67 and Col. 4 lines 1-54 specifically the portion of the descriptive text that discloses the use of *rules* to determine the core locations).

O'Sullivan, *Hogan* and *Fawks* are from the same problem solving area of providing intelligent user interfaces for performing data manipulation.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to have used the GUI tool teachings of *Hogan* in the GUI environment teachings of *O'Sullivan* to transfer items from the Spent Fuel Pool locations as detailed by the figure on page 2 of *O'Sullivan* into a reactor core during fuel recovery and further to have used the nuclear fuel loading arrangement teachings of *Fawks*.

The suggestion for doing so would have been to provide an easy to use interface for moving data from one table, *spent fuel pool* to another table *a fresh fuel table* without any special knowledge of a computer interface. The efficiency and ease of use would motivate an artisan of ordinary skill to provide the GUI tool as disclosed in *Hogan* in the Graphical User Interface environment as disclosed by *O'Sullivan*, the Examiner further notes that the type of tool as disclosed in *Hogan* is well known in the Graphical User Interface art and further that an artisan of ordinary skill in the GUI programming arts would have been motivated to add this type of GUI tool in order to make any simulation software easier to use. As regards the use of the nuclear core loading arrangement teachings of *Fawks* an artisan of ordinary skill would have been motivated to use this methodology to avoid the *hit and miss* methodologies of the past in order to arrive at a better arrangement in a faster and more efficient manner, see *Fawks* Col. 1 lines 35-45 and Col. 2 lines 55-63. Further and in regards to the requirement for a teaching, suggestion and/or motivation please see *Dann v. Johnson*, 425 U.S. 219, 189 USPQ 257 (1976) and *Leapfrog Enterprises, Inc. v. Fisher-Price, Inc.*, --F.3d--, 82 USPQ2d 1687 (Fed. Cir. 2007) as well as *KSR International Co. v. Teleflex Inc.*, 550 U.S. --, 82 USPQ2d 1385 (2007). The cited cases recently decided by the Federal Circuit Court as well as the U.S. Supreme Court clearly set

forth that the references themselves do not have to expressly disclose a teaching, suggestion or motivation to combine references in an obviousness type of art rejection.

Therefore it would have been obvious to combine the teachings of *Fawks and Hogan* with *O'Sullivan* in order to obtain the invention as specified in claims 35-48.

3.2 Regarding claims 37 and 43 and using claim 37 as an example, *O'Sullivan* combined with *Hogan* teaches, *wherein the graphical user interface further includes at least one fuel pool table and a reload table, wherein the graphically populating includes, graphically selecting, sorting, filtering, or moving the graphical fuel bundles within or among the graphical loading map, the at least one fuel pool table, and the reload table via the one or more loading tools, the selecting, sorting, filtering, and moving being based in the one or more fuel attributes of the fuel bundles represented by the graphical fuel bundles* (see pages 1 & 2 of *O'Sullivan* and Figure 9 of *Hogan*).

3.3 Regarding claims 37, 39, 44 and 46 and using claim 37 as an example, *O'Sullivan* teaches, *storing at least one fuel pool database, the fuel database including a fuel pool list of at least one of the fuel bundles residing in the fuel pool; and graphically populating the at least one fuel pool table with a graphical representation of at least one of the fuel bundles on the fuel pool list* (*O'Sullivan* pages 1 & 2 "Access, SQL, Oracle or Sybase as well as Microsoft Excel and Word").

3.4 Regarding claims 38 and 45 and using claim 38 as an example, *O'Sullivan* in combination with *Hogan* teaches, *wherein the graphical user interface includes a fresh fuel table, and wherein the graphically populating includes graphically selecting, sorting, filtering, or moving the graphical fuel bundles within or among the loading map, the at least one fuel pool table, the reload table, and the fresh fuel table via the one or more loading tools, the selecting,*

sorting, filtering, and moving being based on the one or more fuel attributes of the fuel bundles represented by the graphical fuel bundles (see page 2 of *O'Sullivan* "Fresh Fuel Listing" as well as page 1 discloses, "Using a right click on the mouse, groups of symmetric assemblies can be rotated 90, 180 or 270 degrees, core locations are darkened where an assembly has been moved." Regarding the loading tool see *Hogan* figure 9).

3.5 Regarding claims 40 and 47 using claim 40 as an example, *O'Sullivan* teaches, *analyzing the populated graphical loading map by simulating reactor performance with the populated graphical loading map, the analyzing performed before the physically placing the fuel bundles into the reactor core according to the populated loading map* (see the description of "CPW for SIMULATE-3" on page 1 of *O'Sullivan*).

3.6 Regarding claims 41 and 48 and using claim 41 as an example, *O'Sullivan* teaches, *wherein the one or more fuel attributes include at least one of exposure, a previous cycle in which the fuel bundle was used, k infinity...* *O'Sullivan* teaches, (page 2 "Spent Fuel Pool" K-Infinity is the 7th column from the left).

Conclusion

4. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DWIN M. CRAIG whose telephone number is (571)272-3710. The examiner can normally be reached on 10:00 - 6:00 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul L. Rodriguez can be reached on (571) 272-3753. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Dwin M Craig/
Examiner, Art Unit 2123

/Paul L Rodriguez/
Supervisory Patent Examiner,
Art Unit 2123